IDAHO LEWIS AND CLARK BICENTENNIAL NEWS
Volume 3, Number 1 July 2003

Published by the Lewis and Clark Information Center, an office of the Idaho State Historical Society, for the Governor's Lewis and Clark Trail Committee.

Update on the Article, "Lolo Trail Surveyed"

The trail survey reported by this article took two summers to complete, 2002 and 2003. My survey assistant in 2002 was Theo Peterson, a student at Iowa State University. My survey Assistant in 2003 was Matt Battani, also a student and a member of the Iowa State Wrestling Team. Both were in excellent condition to survive the hot days and steep hillsides of the Lolo Trail National Historic Landmark. (I was 59, but in great shape. I would go on to do long-distance biking, and in 2008, at the age of 64, would post my longest distance of 62 miles over hilly western Iowa.)

This is a great article, but one "fact" need corrected. In the years proceeding the survey, I had hiked the complete trail, and several segments multiple times. We were not looking for the trail in the sense of finding it, but we were looking for the trail tread in the heavy underbrush.

The Lolo Trail NHL is actually a "braid" of several historic trails, i.e., it is a system of trails. These trails are: 1) The Northern Nez Perce Trail, as followed by Lewis & Clark in 1805 and 1806 (now the Lewis and Clark National Historic Trail), 2) The Northern Nez Perce Trail as followed in 1831 by a Hudson's Bay Company fur brigade, under the command of John Work (Wark), 3) The 1866 Virginia City and Lewiston Wagon Road (Bird-Truax Trail), a federal project under the supervision of Wellington Bird of Mount Pleasant, Iowa, 4) and finally, the Nez Perce National Historic Trail of 1877. These trails are tightly intermingled and share much of the trail tread across the Bitterroot Mountains.

The survey was funded by a $10,000 grant from the Idaho Governor's Lewis and Clark Trail Committee.

The GPS (Global Positioning System) data was collected with a Trimble Pathfinder Pro XRS, the best survey instrument available at the time. The data was post-processed with GIS software available from ArcView and National Geographic. Best accuracy was 2-3 meters. In deep valley environments, the accuracy was 5-10 meters.

I have also attached a poster from a presentation I did at Iowa State University; "Precision Surveying of Historic Trails, Lewis and Clark in Idaho -2004, Steve F. Russell, Associate Professor, Iowa State University, GIS Day –Nov 15, 2006."

I have attached a map of the trail and some photos taken during the surveys.

Sad Note on Historic Preservation: In my primary years (1989-2004) of hiking historical trails, especially the Lolo Trail, I saw almost no vandalism of historic sites and signage. However, in the years after about 2005, there was evidence that people were removing the historic signs and tearing down the rock cairns. I feel fortunate to have witnessed the trail in a more pristine state and have over 3,000 photos to document it. In addition, the USDA Forest Service has "modernized" portions of the trail and has intentionally obscured other (original) sections of authentic trail tread.

Steve F. Russell, PhD, PE
Historical Trails Research
Ames, Iowa 50014

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Editor: Keith Petersen

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To be added to the mailing list or for information about the bicentennial, contact Keith Petersen at: the Center, 415 Main, Lewiston ill 83501,208-792-2249, or keithp@lcsc.edu.

Office space for the Lewis and Clark Information Center is generously provided by Lewis-Clark State College.

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MUSEUMS TAKE CENTER STAGE

The Lemhi County Historical Society sits on busy Main Street in downtown Salmon and houses one of the nation's largest collections of Lemhi Shoshone artifacts. The Historical Museum at St. Gertrude sits in quiet solitude on the grounds of the Monastery of St. Gertrude near Cottonwood and highlights artifacts from some of Idaho's most colorful figures, such as Buckskin Bill and Polly Bemis. The Appaloosa Museum and Heritage Center, on the edge of Moscow, is the nation's outstanding museum of the spotted horse that Lewis and Clark described when venturing through Nez Perce and Palouse Indian country.

So what do these three museums have in common? Along with seven others, they are all part of the Idaho Governor's Lewis and Clark Trail Committee Museums Initiative. The initiative works with ten existing historical museums along and adjacent to the Trail in ~~Idaho to~~ help them prepare for the upcoming bicentennial commemoration. The Governor's Committee targeted existing museums in its long-range plan for the bicentennial, and since then has developed a multi-dimensional initiative to assist the museums.

To begin the initiative, the Governor's Committee, with support from the Idaho Humanities Council, Idaho Heritage Trust, and Idaho State Historical Society, sent a team of museum, architectural and tourism professionals to visit each museum and consult with trustees, staff, and volunteers. The team provided written reports to each museum, noting ways that each could better serve its public and preserve artifacts in its care.

Each year, the Governor's Committee hosts a workshop for staff and trustees of the participating museums to share information and ideas. The Governor's Committee also published a brochure, *Idaho Museums Along the Lewis and Clark Trail,* that is widely distributed at visitor information centers, chambers of commerce, and other outlets.

But the most significant assistance has come in the form of annual funding for each of the participating museums. Now in its third year, the Governor's Committee initiative has provided nearly $45,000 to each of the museums to help them prepare for the bicentennial.

"Our goal is not to turn these museums into Lewis and Clark interpretive centers," said Governor's Committee chair Beryl DeBoard. "Visitors to Idaho during the bicentennial will have many opportunities to learn about Lewis and Clark. We want them to also learn more about Idaho, both before and after Lewis and Clark. Working with existing museums, we believe we can help to tell that story."

Former Governor's Committee chair Anne Schorzman noted, "The Museums Initiative is one of the most important lasting legacy endeavors we are undertaking. We want to help the museums prepare for increased visitors during the bicentennial, but we also want to help ensure that the museums are better off once the bicentennial is over."

Judging from the comments of staff and trustees at the participating museums, the initiative is having that desired effect. "The

Continued

In February 2003, Senator Michael Crapo visited the Latah County Historical Society's McConnell Mansion Museum and saw first hand how the Governor's Committee Museums Initiative is making a difference for Idaho's museums. [photo courtesy of Mary Reed]

LOLO TRAIL SURVEYED

In 2001 the Governor's Lewis and Clark Trail Committee awarded a grant for a precise survey of the Lewis and Clark National Historic Trail and campsites between Lolo Pass and Kamiah, Idaho, using survey-quality Global Positioning System (GPS) equipment. The survey work got started in 2002 under the leadership of trail expert Steve Russell, working with Theo Peterson, both of Iowa State University. Their goal was to survey the erosion trace of the most difficult parts of the rugged and ancient Nez Perce Trail used by Lewis and Clark.

The project began at Lolo Pass with temperatures in the high 90s. The high heat took its toll, but the biggest challenge of the summer was trying to find the old trail buried in heavy brush. Trail segments that were very easy to find in previous summers were so obscured that the surveyors sometimes had to get on hands and knees to peer under the brush and see the trail tread.

Camping and traveling on the Lolo Trail brought a unique brand of adventure. Lewis and Clark rode horses, but Steve and Theo had to settle for a Ford Escort. Lewis and Clark's horses sometimes fell off the trail and rolled with their packs. Steve and Theo's Ford Escort blew a water pump and shredded a timing belt on Highway 12.

Theo Peterson at Bowl Butte along the Lolo Trail. The background is looking south across the Lochsa River toward the Selway and the mountains between the Lochsa and the Selway. The precision CPS unit is lying by Theo. [photo courtesy of Steve Russell]

Using and maintaining survey equipment under primitive conditions was a challenge. Each night the surveyors downloaded the day's GPS data into a laptop computer and processed it using a Geographic Information System. These numerous files were then backed up to a compact disk.

Preliminary results of the survey have been very encouraging, and the summer of 2003 promises to be another successful one, when work should be completed on the survey. Steve and Theo hope for a bit cooler weather, and a few less mosquitoes.

For more on the survey, contact Steve Russell at ~~steve@vulcan.ee.iastate.edu~~ SFR@IASTATE.EDU. •

LEWIS AND CLARK SPEAKERS AVAILABLE

If you are seeking a Lewis and Clark speaker for upcoming programs, Idaho has two places to look for great ideas.

The Clearwater-Snake Lewis and Clark Bicentennial Committee (CSLCBC) Speakers' Bureau features a dozen speakers on a wide diversity of topics, ranging from "A Nez Perce Meets Captain William Clark" to "Ordway, Frazer and Weiser into Hells Canyon." In addition to programs dealing specifically with the Corps of Discovery, the CSLCBC program also emphasizes Nez Perce topics, such as "The Nez Perce Kinship System" and "Nature's Supermarket," a talk that delves into the Nez Perce Tribe's use of plants and trees. The Clearwater-Snake Committee will cover the costs of up to two speakers per year, per organization. If you are interested in learning more about the CSLCBC Speakers' Bureau, contact CSLCBC Administrator Jody Pethtel, 208-935-7636, or cs1cbc@camasnet.com.

The Idaho Humanities Council (IHC) has had a Speakers' Bureau since 1990. In response to an increasing demand for bicentennial speakers, the Governor's Lewis and Clark Trail Committee in 2002 awarded IHC a grant to expand the number of Lewis and Clark speakers. The Lewis and Clark topics available from speakers in the IHC Bureau are also very diverse, from first-person impersonators of Sacajawea and Meriwether Lewis to topics such as "The Corps of Discovery in Eastern Idaho" and "Lewis and Clark Among the Nez Perce."

The charge for an IHC speaker is only $35; the IHC pays all other costs, including travel expenses. The IHC does request that the host organization guarantee an audience of at least 20 people. To obtain a booklet of all the speakers available through the Bureau, contact the IHC toll free at 888-345-5346. Or you can view a list of topics by going to *www.idahohumanities.org*. Click on "resources" and then click on "speakers' bureau." •

Tim McNeil as Meriwether Lewis [Photo courtesy of Tim McNeil]

ADDITIONAL SURVEY NOTES

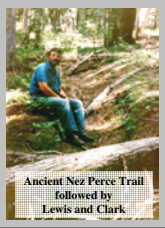
Precision Surveying of Historic Trails

Lewis and Clark in Idaho - 2004

Iowa State University GIS Day – Nov 15, 2006

1 Steve F. Russell – Interests and Goals

- Scholarly research on historic trails with original journals, original maps, and modern field work (camping out all summer)
- Work with state, federal, Tribal, and historic preservation agencies
- High-accuracy GIS results using ARCVIEW and precision GPS
- Natural history documentation: geology, plants, animals
- Archival results: publications and documentation in state historical society archives and journals

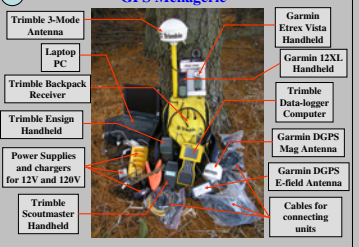


Ancient Nez Perce Trail followed by Lewis and Clark

2 Technology Summary

- US Geological Survey topographic maps
- USGS digital raster graphics maps
- ARCVIEW Geographic Information System precision mapping
- Trimble Pathfinder PRO/XRS precision survey quality GPS
- Pathfinder Pro mapping software
- Laptop with support software and CD archive
- Logistics: battery chargers, inverters

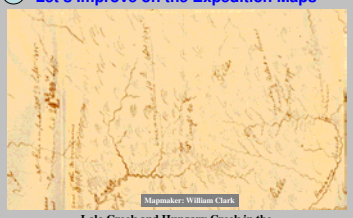
3 GPS Menagerie



4 Trimble Pathfinder Pro XRS

- Precision DGPS stand-alone unit
- Satellite, WAAS, and Coast Guard beacon DGPS
- 8-10 hours of battery life in the field
- Highly flexible data logging
- Designed to minimize data errors in the field
- High performance receiver with multipath compensation
- Designed to operate in heavy forest canopy

5 Let's Improve on the Expedition Maps



Lolo Creek and Hungary Creek in the Bitterroot Mountains of North-Central Idaho

6 Zig-Zag Searching for the Trail

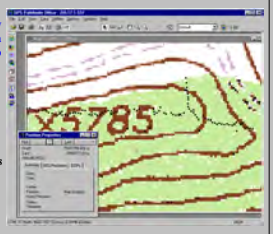
It takes a large amount of searching all around to find the trail tread

A bear has been inspecting this old log in search of insects

7 Screen Shot of Pathfinder Map and data

Initial Raw Survey Data with Topo Map

- Quad: Rocky Ridge
- Locality: Rocky Ridge Lookout
- DRG: o46114e6
- NAD 27 (conus) UTM
- ZONE: 11
- NORTH: 5161708
- EAST: 680670



8 Loss of Accuracy During Real-Time Tracking

- Methods of DGPS
  - Coast Guard beacon
  - Subscription satellite system
  - Wide Area Augmentation System (WAAS) satellite
  - Base-Rover differential GPS

In heavy forest canopy, only the low-frequency Coast Guard beacon is effective. DGPS satellite signals are too weak to be received.

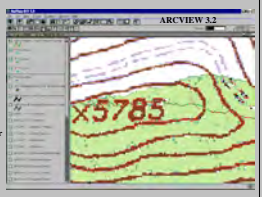
Although the Pathfinder receiver reported 3D differential GPS, its tracking loop had lost lock and gave an error almost 40 times larger than was reported

So far, the only effective solution to this problem has been to manually post-process the data

9 Manual Post-Processing of Data - Final Results

Manual post-processing of data with ARCVIEW

- Smooth line drawn between known good points
- Interpolation is used
- Scallops and other loss-of-tracking artifacts are removed
- Field notes and memorized trail features are used to assist interpolation



10 USGS Topographic Map Errors

Errors in a topographic map can make it look like the GPS plot is in error

The map to the above right has the GPS data accurately plotted on a USGS 7.5 minute DRG. The map elevation contours are distorted and too far west and south of the actual location of this ridge

The GPS plot on the map to the below right has been distorted so that it appears to be in the correct location. This is fine for hiking and reading paper maps but any GPS readings taken from this map will be in error

Conclusion: The accuracy of USGS DRGs is not adequate for accurate portrayal of both the correct UTM location and the perceived topographic location

Initial Processing of Data

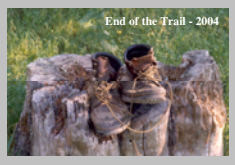
"A different kind of tailgating"

LOLO SUMMIT
THE LEWIS AND CLARK PARTY CROSSED THIS PASS SEPT. 13, 1805, WESTBOUND FOR THE PACIFIC AFTER A LONG DETOUR TO THE SOUTH.
12
247

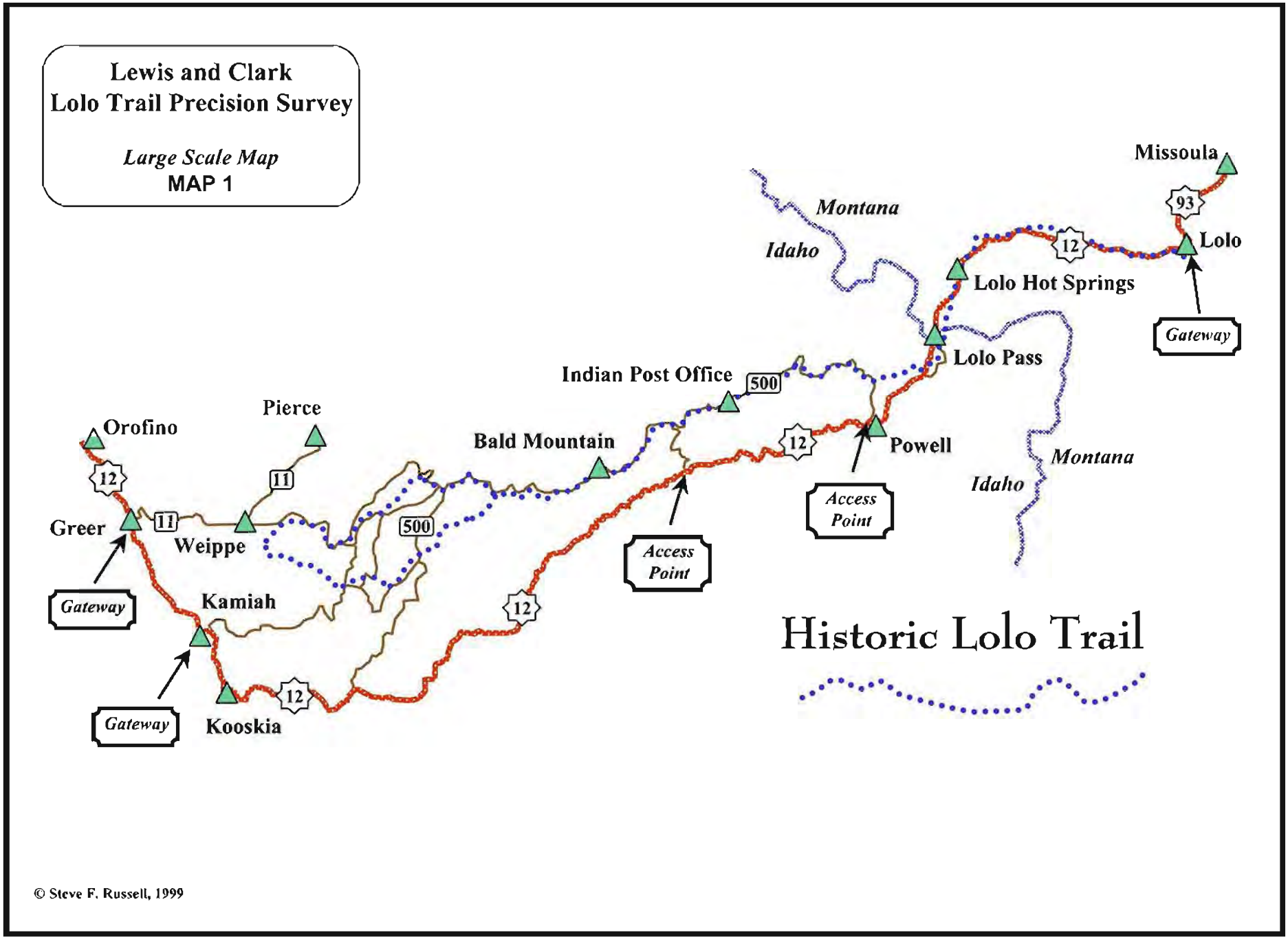
Last surviving plaque put along the trail by Jack Harlan, 1935

Note bullet holes!

Salmon River Canyon in Idaho



Steve F. Russell
Associate Professor
Iowa State University
sfr@iastate.edu


Lewis and Clark
Lolo Trail Precision Survey
Large Scale Map
MAP 1
Missoula
93
Lolo
Montana
Idaho
12
Lolo Hot Springs
Gateway
Lolo Pass
Indian Post Office
500
Pierce
Orofino
Bald Mountain
12
Powell
Montana
Idaho
11
12
Access Point
Greer
11
Weippe
500
Access Point
Gateway
Kamiah
12
Historic Lolo Trail
Gateway
12
Kooskia
© Steve F. Russell, 1999

View of the crest of the Bitterroot Mountains, from the Lolo Trail. (Photo by S. Russell)

View of a rock cairn at Smoking Place on the Lolo Trail. The GPS unit is set on the cairn to show it's relative size. Mountains of the Lochsa River are shown in the foreground, the crest of the bitterroot Mountains is in the far background. (Photo by S. Russell)

Rock cairn at Smoking Place with memorial beads placed on top. Memorials such as beads, money, articles of clothing, etc, are common. Unfortunately, since this photo was taken, the items have been taken and the rock cairn destroyed. (Photo by S. Russell)

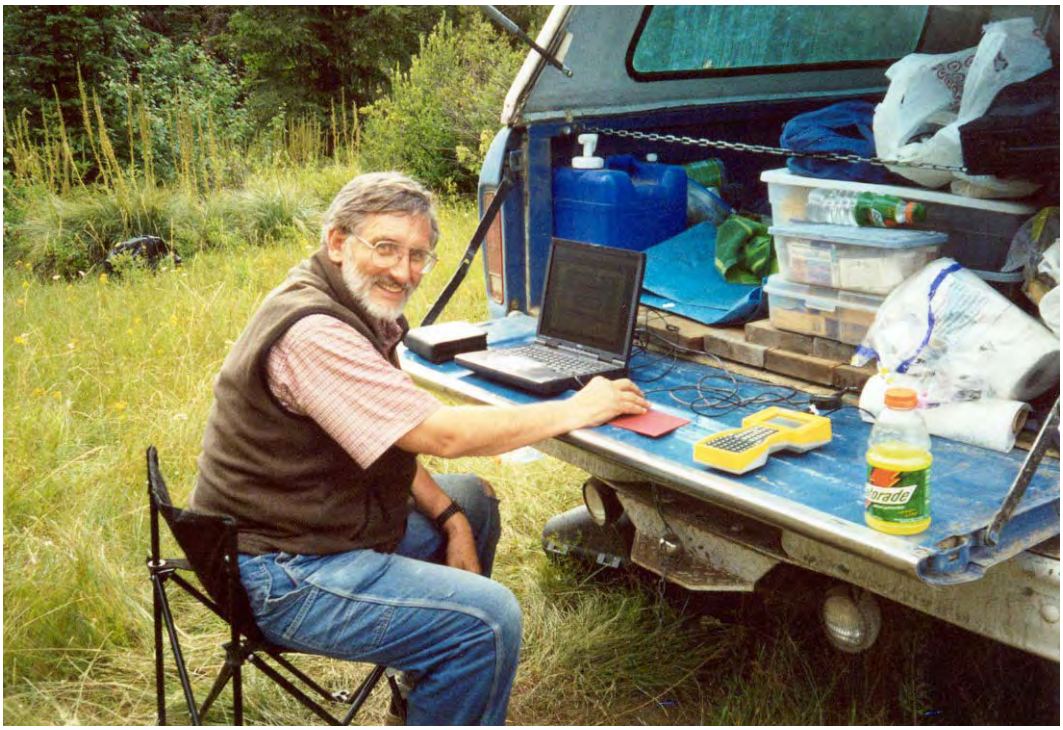
Photo of group of federal and state employees, with Matt Battani (lower left), at Smoking Place on the Nez Perce National Historic Trial. Matt and I met this group while we were hiking out to our campsite. (Photo by S. Russell)

Steve F. Russell at a Nez Perce memorial rock cairn in the Idaho Bitterroot Mountains. So far, these cairns have avoided vandalism. (Photo by S. Russell)

Matt Battani resting on rocks where the Nez Perce National Historic Trail leaves the main ridge and descends into Hungery Creek. (Photo by S. Russell)

Falls of Hungery Creek below the Nez Perce National Historic Trail. The trail goes along the north side of the creek. (Photo by S. Russell)

Black bear claw marks on deadfall along the Nez Perce National Historic Trail, east of Lolo Campground. (Photo by S. Russell)



"*The job isn't over til' the paperwork is done*."
Steve is processing the day's GPS data on the tailgate of his Ford F-250 pickup (9 miles to the gallon), aptly called the "Ranger Model." (Photo by S. Russell)

Theo at the Lewis and Clark campsite the USDA Forest calls "Snowbank Camp." (Photo by S. Russell)